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ABSTRACT

This document addresses itself to three aspects of the Follow Through Classroom Observation Study: (1) the extent of implementation in the classroom, (2) the relationship of training and teacher characteristics to classroom implementation, and (3) the relationship of student outcome to classroom implementation and program characteristics. The sections on sponsor implementation provide convincing evidence that teachers are conforming to sponsor specifications. There is little deviation between classrooms on implementation variables, and, except for one sponsor, Educational Development Center, the models differ statistically from non-Follow Through. Follow Through teachers have both the understanding of the model, since each sponsor's group of teachers described their own classrooms quite consistently on the structure/flexibility scale, and the ability to implement the model as proven by the systematic observations. The children's test scores are also reported. (BB)

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AN IMPLEMENTATION STUDY

OF SEVEN FOLLOW THROUGH MODELS FOR EDUCATION

by

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AN IMPLEMENTATION STUDY
OF SEVEN FOLLOW THROUGH MODELS FOR EDUCATION

The study of implementation has too often been neglected in the evaluation of large-scale social reforms. A problem in evaluating educational innovations is that, in too many cases, the programs have not been implemented. Evaluation, therefore, could not yield meaningful information about either the effectiveness or ineffectiveness of the innovation. Charters and Jones (1973, p. 6) state that the collection of test data is an "abrogation of professional responsibility" unless evaluators also measure, or at least describe, experimental and comparison program differences to determine whether the behavior patterns of teachers and students are consistent with the planned innovation. The consequence of slighting the implementation factor is that "elaborately designed studies may end up as appraising non-events, with no one the wiser" (Charters and Jones, p. 5).

Goodlad's (et al., 1970) Behind the Classroom Door and Weikart's (et al., 1973) "Planned Variation from the Perspective of a Model Sponsor" also provide information of relevance to the implementation issue. Goodlad's study indicates that although teachers and principals of the sampled schools assumed that they had implemented educational innovations, findings from observations in the classroom reveal quite the reverse--that traditional education practices generally are prevalent:

> "One conclusion stands out clearly: many of the changes we have believed to be taking place in schooling have not been getting into classrooms...there seems to be considerable discrepancy between teachers' perceptions of their own innovative behavior and the perceptions of observers," (Goodlad, et al., 1970, pp. 97 and 98).

Weikart (et al., 1973) stated that sponsors learned the hard way that there was "apparently a vast gulf between the smiles and nods of workshop sessions and actual classroom implementation of a model," (p. 12). Despite "the enthusiasm of the summer workshops," Weikart found little change in the classrooms a few months later. These findings add confirmation to Mason's (1973) assertion that evaluation studies frequently find that the

innovation "was not actually implemented in the manner specified by the developer."

Although the effectiveness and utility of innovative programs for compensatory education have come under serious question of late (Jencks (1972) and Mosteller and Moynihan (1972)), these studies only evaluated the effects of components of educational systems such as library facilities and science laboratories or achievement test results. They did not evaluate the effects on achievement of total educational programs based upon developmental theories such as those in Follow Through.

Project Follow Through was established by the Congress in 1967* when it became apparent that a program was needed in the early grades of public school that was compatible with Project Head Start's goals and approaches and, therefore, would provide a comparable educational program for economically disadvantaged children over a longer period of time.

Follow Through was originally set up in a "planned variation" research design; that is, the goal was to examine the differential effectiveness of programs based on divergent educational and developmental theories. The program began when a group of educational researchers, later called Follow Through program sponsors, were invited by the government to submit plans for establishing their various programs in public schools. This was done in order to test their programs' ability to improve the educational achievement of economically disadvantaged children. Eleven of the sponsors had developed and tried their educational concepts in university settings; eight were affiliated with private research institutes, and three were community developed programs. See Egbert (1973) for a history of Follow Through.

From the inception of the Follow Through evaluation, researchers felt that it was important to assess whether the sponsors were effective in getting teachers to practice their specified curriculum methods in the classroom. In order to obtain information regarding teacher behavior and to determine whether a child's day in the classroom corresponded with the sponsor's educational prescriptions, it was necessary to observe the

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*The legislative authority for Project Follow Through was the Economic Opportunity Act of 1964, as amended.

classrooms systematically. Therefore, an observation instrument was needed because:

- Systematic observation is a basis for judging the extent to which the intended treatment is actually present.
- Systematic observation is a way to obtain an objective description of treatments.
- Observation can be used as an alternative to more traditional methods for assessing child growth and development.

With the assistance of eight sponsor representatives, the observation instrument was developed by SRI in the fall of 1969. The observation instrument had to be broad and flexible enough to record the wide variety of techniques and approaches used in the various models. As examples, Donald Bushell's Behavior Analysis Approach model requires systematic recording of the following interactions: the teacher's question, the child's response, the immediate feedback to the child, and whether or not a token was given. David Weikart's Cognitively Oriented Curriculum model needs a way to record the fact that the adults asked open-ended questions of the children, and on the basis of these questions the children made individual choices and plans for their day's work. The University of Pittsburgh's Individualized Early Learning Program needs a way to record that the teacher moves about the room providing feedback to individual children. The University of Arizona's Tucson Early Education Model and the Bank Street College of Education Approach call for a way to indicate that the curriculum is interdisciplinary and reflects the child's community. The Responsive Educational Program of Far West Laboratory requires a way to record that concrete objects are used by the children as they explore their environment. For the EDC Open Education program, children have to be recorded as independently engaged in a variety of activity centers.

In order to record the presence of these various components, SRI developed an instrument which could (1) assess the physical environment; (2) list the classroom activities occurring simultaneously such as social studies, reading, math, and art; (3) record who was involved in the activity such as teachers, aides, and/or groups of children; and (4) code the verbal and nonverbal adult-to-child or child-to-child interaction.

Training procedures were developed and observers were trained to observe systematically in classrooms all over the country. This effort made it possible to assess whether the teacher behavior specified by the sponsors actually was occurring in the classrooms. In each of our four years of observational research, we found that the classroom teachers and aides performed as specified by the sponsor on many of the components that are important to the model.

In addition to observing teachers, we also observed individual children. Some sponsors had said, "If you want to know if we are implemented, you must observe our children." For this reason, our system was modified to observe individual children. The findings from these child observations have been used to evaluate sponsor implementation and to measure a child's skill in such behaviors as independence, question asking, task persistence, and cooperation.

The data reported in this paper were collected in the spring of 1973 in 36 project locations. The sample represents approximately 20 first grade and 20 third grade classrooms for each of seven Follow Through sponsors at five or more sites per sponsor.* Classroom implementation is judged on the basis of two criteria: (1) how uniform are the sponsor classrooms on selected implementation variables, and (2) how the sponsor classrooms differ from the traditional non-Follow Through classrooms on the same variables. The primary purpose of this paper is to present the findings from the assessment of the sponsor classroom implementation. In addition, results of analyses of the relationships between classroom implementation and sponsor's procedures, implementation and teacher characteristics, and implementation level and children's test scores are also reported in this paper.

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*Sponsors of educational models who were observed in Spring 1973: Far West Laboratory for Educational Research and Development (5 sites), University of Arizona (6 sites), Bank Street College of Education (5 sites), University of Oregon (5 sites), University of Kansas (5 sites), High/Scope Educational Research Foundation (5 sites), and Education Development Center (5 sites). These sponsors were chosen for observation because they met the criterion of having five or more sites being implemented.

A. Methodology Used in the Study of Implementation

The first step in the assessment of classroom implementation was to describe each educational model in detail. The model descriptions were prepared by SRI and reviewed by sponsors and then revised according to the sponsor's specifications. The second step was to create variables from the codes used on the observation instrument which would describe representative elements of each sponsor's model. Each sponsor was sent a variable list and asked to rate each variable as to (1) its importance to the model, and (2) the expected frequency of occurrence of the variable relative to a conventional classroom. Thus, a list of variables was selected for each of the seven models. These ranged in number from 31 for University of Oregon to 55 for Bank Street.

Since the Follow Through programs are intended to be innovative programs that represent alternatives to the conventional classroom, a pool of non-Follow Through classrooms was used as the standard from which Follow Through classrooms should differ in specified ways. The standard was established separately for first and third grades. The classrooms of each sponsor were assigned an implementation score on each of the variables selected for that sponsor.

Implementation scores for each sponsor were determined by rank ordering the non-Follow Through classroom *mean scores* on each sponsor variable and dividing the distribution into five equal parts. There are 35 non-Follow Through first grades. The seventh lowest score is the first quintile cutpoint; the fourteenth lowest score is the second quintile cutpoint; the twenty-first lowest score is the third quintile cutpoint; and the twenty-eighth lowest score is the fourth quintile cutpoint. Any Follow Through classrooms which have a score equal to or below the seventh score is in the first quintile. Any Follow Through classroom having a score above the twenty-eighth non-Follow Through score is in the fifth quintile. Figure 1 shows the cutpoints for implementation scores for the variable "Games, Toys, Play Equipment Present" for the first grade non-Follow Through classrooms.

The implementation score for a sponsor will always be a score between 1 and 5. This represents the position of a Follow Through classroom mean relative to the distribution of non-Follow Through means (see Table 1).

Figure 1

GAMES, TOYS, PLAY EQUIPMENT PRESENT
(First Grade)

Quintiles:

7 Classroom Scores	7 Classroom Scores	7 Classroom Scores	7 Classroom Scores	7 Classroom Scores

Scores:	3.5 Cutpoint 1	4.2 Cutpoint 2	5.1 Cutpoint 3	6.3 Cutpoint 4
Percentiles:	20th	40th	60th	80th

Table 1

WIDE VARIETY OF ACTIVITIES, OVER ONE DAY

	Implementation Scores									
	First Grade					Third Grade				
Sites	1	2	3	4	5	1	2	3	4	5
Berkeley					4				1	3
Duluth				3	1				1	3
Lebanon					4					4
Salt Lake City					4			1	1	2
Tacoma					4			2	1	1
Total Classrooms:				3	17			3	4	13
Percent of Classrooms:				15	85			15	20	65

This nonparametric scaling technique was used rather than a technique that employs the means and standard deviations of the non-Follow Through classrooms because of the variety of distributions that were encountered in the non-Follow Through classrooms. The distributions ranged from the familiar bell shape to a j-shaped curve to those with extreme outliers. A parametric approach which may be appropriate to one distribution may be inappropriate to another. The nonparametric procedures selected for use tend to be less sensitive to these differences in distribution than are the more conventional parametric procedures. (See Table 2 for sponsor implementation variables and quintile cutpoints.)

Table 2

NON-FOLLOW THROUGH QUINTILE CUTPOINTS FOR SPONSOR IMPLEMENTATION VARIABLES

Variables		Sponsor-Selected Variables*								Non-Follow Through Quintile Cutpoints											
										First Grade						Third Grade					
No.	Names	UTypes** 1	UTypes** 3	UA	BC	UO** 1	UO** 3	UK	HS	ED	Minimum***	1st	2nd	3rd	4th	Maximum***	Minimum***	1st	2nd	3rd	4th	Maximum***
24	Child selection of seating and work groups	X	X	X	X				X		0	0	.5	1.0	1.0	2.0	0	0	0	1.0	2.0	4.0
25	Games, toys, play equipment present	X	X	X	X	X	X	X	X		1.0	3.0	4.0	5.0	6.0	9.0	1.0	2.0	3.0	4.0	5.0	7.0
27	Instructional materials present	X		X	X	X	X	X	X		2.0	3.0	3.0	4.0	4.0	4.0	1.0	2.0	3.0	3.0	4.0	4.0
37	Audio visual equipment present	X	X	X	X	X	X	X	X		0	1.0	2.0	2.0	3.0	3.0	0	0	2.0	2.0	3.0	3.0
39	General equipment, materials present	X	X	X	X	X	X	X	X		4.0	7.0	8.0	9.0	10.0	11.0	1.0	7.0	8.0	9.0	10.0	12.0
63	Story, music, dancing			X				X			0	1.27	3.35	5.42	9.94	18.04	0	0	1.71	5.32	9.15	24.81
64	Arts, crafts	X	X	X					X		0	1.22	2.49	5.07	7.84	20.09	0	0	.80	2.06	6.82	11.66
65	Guessing games, table games, puzzles	X		X				X	X		0	0	0	0	.51	7.82	0	0	0	.31	1.17	14.70
66	Numbers, math, arithmetic	X	X	X	X	X	X	X	X		0	11.23	16.97	19.32	23.26	32.77	9.71	16.01	20.12	23.85	26.56	36.70
67	Reading, alphabet, language development	X	X	X	X	X	X	X			19.80	36.62	40.36	54.31	58.61	84.20	32.56	38.61	45.84	50.18	55.41	73.52
68	Social studies, geography		X	X			X				0	0	.76	3.42	9.36	18.25	0	.86	4.17	6.83	8.33	14.86
69	Science, natural world		X	X	X		X		X		0	0	2.59	5.16	8.36	16.86	0	0	1.93	5.07	10.44	24.79
70	Sewing, cooking, pounding			X					X		0	0	0	0	0	1.69	0	0	0	0	0	4.76
71	Blocks, trucks	X		X				X	X		0	0	0	0	.33	1.41	0	0	0	0	.49	1.80
72	Dramatic play, dress-up			X					X		0	0	0	0	.37	5.01	0	0	0	0	.32	6.02
73	Active play	X		X				X			0	0	0	0	.33	8.47	0	0	0	0	.36	7.02
74	Practical skills acquisition				X						0	0	0	0	0	.78	0	0	0	0	0	1.64
83	Wide variety of activities, over one day	X	X	X	X				X		2.00	4.00	4.67	5.33	6.33	7.33	2.67	4.33	4.67	5.00	5.67	6.67
86	Teacher with one child	X	X	X	X			X	X		0	0	1.86	4.55	11.86	61.11	0	0	1.64	4.41	11.76	58.82
87	Teacher with two children	X	X	X	X				X		0	0	0	1.61	3.70	10.00	0	0	0	0	4.35	24.99
88	Teacher with small group	X	X	X	X	X	X	X	X		0	6.90	11.67	21.07	36.96	88.06	6	8	9.43	14.63	22.41	42.96
89	Teacher with large group				X	X	X				11.94	41.84	56.82	61.07	79.63	98.31	1.64	47.84	58.21	68.37	68.33	100.00
92	Aide with one child	X	X	X	X			X	X		0	0	0	0	3.70	24.62	0	0	0	1.68	20.48	100.00
93	Aide with two children	X	X	X	X				X		0	0	0	0	0	33.33	0	0	0	0	3.23	100.00
94	Aide with small group	X	X	X	X	X	X	X	X		0	0	0	15.38	42.86	80.65	0	6	6	0	22.58	100.00
95	Aide with large group				X	X	X				0	6	0	12.90	36.59	100.00	0	0	0	0	16.67	100.00
114	One child independent	X	X	X	X			X	X		0	.55	1.06	1.69	3.66	6.41	0	.13	.57	1.06	2.21	10.63
115	Two children independent				X						0	0	1.17	2.36	4.20	8.23	0	0	.82	1.19	2.32	11.60
116	Small group of children independent	X	X		X			X			0	2.57	5.14	13.28	17.30	51.67	0	1.83	4.41	7.54	13.49	60.18
117	Large group of children independent			X							0	2.70	5.61	13.16	26.87	84.25	0	4.38	8.42	15.84	27.36	56.06
237	Audio visual equipment/Academic Activities			X	X						0	0	0	3.30	11.76	37.21	0	0	0	2.60	6.36	48.00
238	Exploratory materials/Academic Activities	X	X	X	X	X	X		X		0	0	0	0	5.86	45.83	0	0	0	0	1.96	18.00
239	Math or science equipment/Academic Activities	X	X	X	X	X	X	X	X		0	0	0	5.66	10.53	44.00	0	0	0	0	5.26	28.53
240	Texts, workbooks/Academic Activities		X		X	X	X	X			18.18	41.86	57.69	72.68	85.45	98.25	7.32	40.54	62.75	78.57	87.27	100.00
241	Puzzles, games/Academic Activities	X		X	X			X	X		0	0	1.69	3.64	7.89	22.45	0	0	0	1.85	7.84	26.09
343e	Child to adult, all verbal except response				X						0	1.17	1.85	2.83	4.16	7.35	.31	.82	2.43	3.41	4.86	10.32
344e	Individual child verbal interactions with adult	X	X	X	X	X	X	X	X	X	12.60	20.55	23.75	27.31	30.80	42.47	7.83	20.20	23.49	26.67	29.26	48.10
360e	Child questions to adults	X	X	X	X			X	X	X	0	.38	.65	1.14	1.78	3.41	0	.52	.81	1.36	2.49	6.48
363e	Child group resp. to adult acc. comm./req. or dir. ques.					X	X			X	0	.80	1.89	2.43	3.32	5.00	.83	.45	1.00	1.34	2.10	3.14
372e	Child presenting information to a group				X				X	X	0	0	0	0	.14	3.35	0	0	0	0	.19	3.75

* An X indicates a variable selected by a sponsor.

** Separate variables for first and third grades are shown for Far West Lab and U. Oregon.

*** Minimum and maximum represents the lowest and highest scores for Non-Follow Through.

Table 2 (continued)

NON-FOLLOW THROUGH QUINTILE CUTPOINTS FOR SPONSOR IMPLEMENTATION VARIABLES

Variables		Sponsor-Selected Variables*								Non-Follow Through Quintile Cutpoints											
		FW**		UA	BC	UO**		UK	HS	ED	First Grade						Third Grade					
No.	Names	1	3			1	3				Minimum***	1st	2nd	3rd	4th	Maximum***	Minimum***	1st	2nd	3rd	4th	Maximum***
375e	Adult instructs an individual child	x	x							x	0	.50	.83	1.50	2.85	6.66	.13	.47	1.45	2.11	3.45	12.48
376e	Adult instructs a group					x	x			x	0	4.85	7.58	8.77	10.24	22.31	.13	3.40	5.32	7.70	10.25	20.35
390e	Adult task-related comments to children			x	x				x	x	0	.32	.57	1.05	1.80	11.21	0	.11	.59	1.17	1.95	6.57
394e	All adult acknowledgement to children	x	x	x	x	x	x	x	x	x	.50	1.44	2.29	2.95	3.65	7.88	.13	1.59	1.76	2.50	3.17	7.53
398e	All adult praise to children			x	x	x	x	x	x	x	.09	.49	.76	1.08	1.69	5.15	0	.17	.44	.84	1.05	2.47
412e	Adult fdbk. to child resp. to adult acs. comm./req., ques.					x		x		x	0	1.11	1.84	2.53	3.47	5.38	.06	.83	1.38	1.98	2.63	5.66
420e	Adults attentive to a small group	x	x		x	x	x		x	x	0	.05	.51	.84	1.32	6.06	0	.05	.10	.32	.64	3.83
421e	Adults attentive to individual children	x	x	x	x			x	x	x	.03	1.06	2.06	3.60	5.10	16.62	0	3.26	3.14	4.90	7.47	10.87
428e	Positive behavior, adults to children	x	x	x	x					x	0	.06	.20	.33	.96	3.99	0	.03	.17	.33	.66	2.66
436e	Total academic verbal interactions	x	x	x	x	x	x	x	x		16.30	20.60	27.97	42.90	46.76	89.20	14.92	25.74	32.62	40.77	49.05	66.23
438e	Adult communication or attention focus, one child	x	x	x	x			x	x	x	14.30	16.36	18.85	20.66	24.83	34.42	7.38	17.49	20.52	22.74	26.13	37.60
440e	Adult communication or attention focus, small group					x	x		x	x	.03	1.02	2.46	3.91	7.82	15.90	0	.43	.92	2.17	3.97	10.18
441e	Adult communication or attention focus, large group					x	x			x	4.86	11.40	14.13	17.60	21.82	30.10	.06	12.10	15.49	19.67	24.13	31.73
444e	Adult movement	x	x		x				x	x	.05	.96	1.96	3.08	6.00	13.32	.13	1.73	2.68	3.89	5.16	13.10
450e	All child open-ended questions	x	x		x					x	0	0	0	0	0	.06	0	0	0	0	0	.10
481e	Adult academic comm./req. & direct questions to children			x	x	x	x	x	x	x	3.10	5.18	6.84	7.78	9.02	13.31	1.33	3.53	4.13	7.06	9.31	13.80
482e	Adult open-ended questions to children	x	x	x	x				x	x	0	.10	.17	.28	.41	1.76	0	.03	.14	.45	.56	1.41
483e	Adult response to child's question with a question				x				x	x	0	0	0	.06	.13	.70	0	0	0	.03	.14	.71
454e	Child's extended response to questions	x	x	x	x					x	0	.06	.13	.47	.88	2.62	0	.06	.20	.51	.80	2.72
456e	All child task-related comments	x	x	x	x				x	x	0	.88	1.46	1.82	3.00	10.24	0	.49	1.08	1.90	3.21	9.88
457e	All adult positive corrective feedback	x	x	x	x	x	x	x	x	x	.58	1.21	1.67	2.20	3.00	4.57	.13	.77	1.49	2.00	2.55	4.54
460e	All child positive effect	x	x	x	x	x	x			x	0	.06	.16	.41	1.06	4.37	0	.06	.13	.30	.65	6.87
469e	All adult reinforcement with tokens							x			0	0	0	0	0	.15	0	0	0	0	0	.13
470e	All adult neutral corrective feedback									x	.03	.80	1.30	2.00	3.47	9.35	0	.80	.87	1.58	2.92	8.27
471e	Adults attentive to large group					x	x			x	.13	1.02	2.50	3.28	5.50	12.22	0	2.13	4.06	5.98	8.10	17.83
476e	Verbal interactions among children				x						1.00	2.70	4.26	6.56	9.56	18.60	.67	3.11	6.13	7.46	11.17	18.90
508e	Child self-instruction									x	0	10.80	15.06	21.03	27.00	36.84	6.35	15.16	18.41	22.08	27.02	38.61
509e	Child self-instruction, academic	x	x	x	x	x	x	x	x		0	6.25	13.06	16.58	23.00	36.45	6.30	12.13	16.28	18.70	24.65	38.61
510e	Child self-instruction, objects	x	x	x	x			x	x	x	0	0	0	.26	2.95	19.94	0	0	0	0	4.90	23.50
512e	Child instructing another child	x	x						x	x	0	0	0	.10	.40	2.54	0	0	.06	.56	1.40	6.66
513e	Child task persistence	x	x	x	x	x	x	x	x	x	0	1.35	2.08	2.90	4.20	6.80	0	1.80	2.60	3.24	3.90	6.56
514e	Two children working together, using concrete objects	x	x		x				x	x	0	0	0	0	0	0	0	0	0	0	0	.80
515e	Small group working together, using concrete objects	x	x		x			x	x	x	0	0	0	0	0	0	0	0	0	0	0	0
516e	Social interaction among children	x	x		x					x	.20	1.00	1.30	1.85	4.35	9.61	0	.90	2.36	3.16	4.45	11.23
574e	Child movement	x	x							x	.20	.80	1.20	2.32	2.94	4.80	0	.56	1.16	1.78	2.75	6.65
899e	Child self-instruction, non-academic	x	x	x	x				x		0	0	.50	3.89	4.90	10.89	0	0	.28	2.35	6.20	20.15

* An X indicates a variable selected by a sponsor.

** Seperate variables for first and third grades are shown for Far West Lab and U. Oregon.

*** Minimum and maximum represents the lowest and highest scores for Non-Follow Through.

For each sponsor's classroom an implementation score was computed for each of the sponsor's variables. A classroom implementation score was computed by dividing the sum of the variable implementation scores by the highest implementation score possible. The resulting proportion was then multiplied by 100 so that it could be expressed in percentage terms. To apply the method in an example, the highest possible sum of implementation scores for a hypothetical classroom being rated on four variables would be 4 x 5 = 20. If a classroom had implementation scores of 3, 3, 4, and 5 on the individual implementation variables, then the total implementation score for the classroom would be $\frac{15}{20}$ x 100 = 75 percent.

In order to assess the magnitude of the total implementation scores for Follow Through classrooms, a total implementation score was also computed for each non-Follow Through classroom on each sponsor's set of implementation variables. The mean and standard deviation of the non-Follow Through pooled classrooms are reported for each sponsor. Separately for first and third grades, one-tailed t tests were computed to test for the significance of the differences between each Follow Through sponsors' classrooms and the non-Follow Through classrooms.

B. Results of the Classroom Implementation Study

Total implementation scores for each classroom for each sponsor are presented in Tables 3, 4, 5, 6, 7, 8, and 9. The means and standard deviations are presented by grade level based on the scores for all of a sponsor's classrooms in each site and also for pooled non-Follow Through classrooms.

The Far West classrooms in both first and third grades are remarkably similar within sites and among sites on total implementation scores, with the greatest deviation found in the third grade in Duluth (see Table 3). Overall, the Far West classrooms at both first and third grades are significantly different from non-Follow Through classrooms when compared on Far West implementation variables. Fifty-one sponsor variables were used in this analysis.

There is a significant difference between the total implementation scores in the first and third grade U. of Arizona classrooms and the non-Follow Through comparison classrooms (see Table 4). However, results for

Table 3

TOTAL IMPLEMENTATION SCORES FOR CLASSROOMS BY SITE FOR FAR WEST

Sites	First Grade Classroom Scores/Site Scores						Third Grade Classroom Scores/Site Scores					
	1	2	3	4	X	SD	1	2	3	4	X	SD
Berkeley (EK)*	73%	76%	75%	73%	74%	1.5	79%	71%	78%	74%	75%	3.5
Duluth (EK)	78	80	80	78	79	1.3	76	64	77	73	73	6.1
Lebanon (EK)	80	76	80	78	78	2.0	68	76	69	67	70	3.9
Salt Lake (EK)	76	82	70	78	77	4.7	81	84	75	85	81	4.5
Tacoma (EK)	77	74	75	72	74	2.1	74	77	74	72	74	2.4
Total Sponsor Scores: (N = 20)					76%	3.1		(N = 20)			75%	5.4
Non-Follow Through Scores: (N = 35)					65%	5.4		(N = 36)			61%	6.9
t = 10.63								t = 7.38				
p < .001								p < .001				

*EK = children entered school in kindergarten.

Table 4

TOTAL IMPLEMENTATION SCORES FOR CLASSROOMS BY SITE FOR U OF ARIZONA

Sites	First Grade Classroom Scores/Site Scores						Third Grade Classroom Scores/Site Scores					
	1	2	3	4	X	SD	1	2	3	4	X	SD
Des Moines (EK)*	77%	67%	70%	71%	71%	4.3	63%	55%	55%	67%	60%	6.3
Fort Worth (E1)*	78	76	73	73	75	2.6	64	78	73	78	73	6.3
LaFayette (E1)	75	62	80		73	9.5	60	64	73	75	68	7.3
Lakewood (EK)	72	71	73	75	73	1.7	68	71	68	65	68	2.7
Newark (EK)	54	47	54	55	52	3.4	58	55	58	58	57	1.7
Lincoln (EK)	76	80	65	71	73	6.5	72	71	72	77	73	2.7
Total Sponsor Scores: (N = 23)					69%	9.2		(N = 24)			66%	7.6
Non-Follow Through Scores: (N = 35)					62%	5.4		(N = 36)			61%	6.8
t = 4.00								t = 2.82				
p < .001								p < .01				

*EK = children entered school in kindergarten.
E1 = children entered school in first grade.

the first grades in LaFayette and Lincoln reveal a greater deviation within the first grade total implementation scores than in the deviation of the non-Follow Through first grade scores. Also, while the first and third grades at Newark show little deviation within the classrooms at the sites, their total implementation scores for both grades are lower than those of the non-Follow Through classrooms. Thus, while the total implementation score for the U. of Arizona classrooms is significantly higher than the non-Follow Through classrooms, there is also a greater deviation between the total implementation scores of the U. of Arizona classrooms than that shown in the non-Follow Through classrooms (based on 48 sponsor variables).

The Bank Street first and third grade classrooms are notably similar in total implementation scores both within and among sites (see Table 5). Not only are their implementation scores significantly higher than the non-Follow Through scores, but the deviation between Bank Street classrooms is also less than the deviation between non-Follow Through classrooms (based on 55 sponsor variables).

Table 5

TOTAL IMPLEMENTATION SCORES FOR CLASSROOMS BY SITE FOR BANK STREET

	First Grade						Third Grade					
	Classroom Scores/Site Scores						Classroom Scores/Site Scores					
Sites	1	2	3	4	X	SD	1	2	3	4	X	SD
Brattleboro(EK)*	66%	69%	62%		66%	3.3	71%	70%	67%		69%	2.2
Fall River (EK)	75	70	68	67%	70	3.7	59	64	63	67%	63	3.2
New York (EK)	72	71	73	69	71	1.7	67	71	77	71	72	4.1
Philadelphia (EK)*	74	74	74	70	73	1.7	64	68	63	68	66	2.6
Tuskegee (E1)*	76	75	72	76	75	1.8	64	75	68	64	68	5.3
Total Sponsor Scores: (N = 19)					71%	3.7		(N = 19)			67%	4.4
Non-Follow Through Scores: (N = 35)					62%	5.2		(N = 36)			62%	6.9
t = 6.53								t = 3.15				
p < .001								p < .001				

*EK = children entered school in kindergarten.
E1 = children entered school in first grade.

The striking similarity in total implementation scores for both first grade and third grade U. of Oregon classrooms is shown in Table 6. There is little classroom deviation either within or among sites. The non-Follow Through classrooms' total implementation scores are significantly different from the U. of Oregon classrooms (using 31 sponsor variables).

Table 6

TOTAL IMPLEMENTATION SCORES FOR CLASSROOMS BY SITE FOR U. OF OREGON

		First Grade						Third Grade					
		Classroom Scores/Site Scores						Classroom Scores/Site Scores					
Sites		1	2	3	4	X	SD	1	2	3	4	X	SD
E. St. Louis	(EK)*	63%	60%	59%	65%	62%	2.5	67%	61%	63%	65%	64%	2.7
New York	(EK)	68	77	77		74	5.4	63	66	61		63	2.4
Racine	(EK)	62	61	61	63	62	1.3	63	63	67	67	65	2.5
Tupelo	(E1)*	64	70	71	68	68	3.1	68	62	70	60	65	4.8
Providence	(EK)	61	63	61	62	62	1.3	61	67	59	55	61	5.1
Total Sponsor Scores:		(N = 19)				65%	5.4	(N = 19)				64%	3.7
Non-Follow Through Scores:		(N = 35)				60%	8.7	(N = 36)				60%	6.7
		t = 3.41						t = 2.41					
		p < .001						p < .05					

*EK = children entered school in kindergarten.
E1 = children entered school in first grade.

The findings presented in Table 7 reveal few differences in total implementation scores either within or among sites for the classrooms of the U. of Kansas. When total implementation scores were computed for the non-Follow Through classrooms on the U. of Kansas variables and compared to the U. of Kansas classrooms, significant differences for both grades were found (using 34 sponsor variables in this analysis).

Results for High/Scope's first and third grades have noticeably similar total implementation scores within sites (see Table 8). The Greeley site has higher implementation scores than all the other sites in both grades. This is an interesting finding because it is the only site

Table 7

TOTAL IMPLEMENTATION SCORES FOR CLASSROOMS BY SITE FOR U. OF KANSAS

Sites	First Grade Classroom Scores/Site Scores 1	2	3	4	X	SD	Third Grade Classroom Scores/Site Scores 1	2	3	4	X	SD
New York (EK)*	69%	68%			68%	.5	69%	76%			73%	4.7
Philadelphia (EK)	74	74	72%	79%	75	3.0	74	73	71%	74%	73	1.4
Portageville (EK)	82	83	78	74	79	4.4	79	71	71		74	4.6
Kansas City (EK)	75	69	71	63	69	4.9	79	75	73	72	75	3.1
Louisville (EK)	75	78	78	68	75	4.4	68	75	68	72	71	3.6
Total Sponsor Scores: (N = 18)					74%	5.3		(N = 17)			73%	3.3
Non-Follow Through Scores: (N = 35)					62%	5.7		(N = 36)			61%	7.5
t = 7.50								t = 6.25				
p < .001								p < .001				

*EK = children entered school in kindergarten.

Table 8

TOTAL IMPLEMENTATION SCORES FOR CLASSROOMS BY SITE FOR HIGH/SCOPE

Sites	First Grade Classroom Scores/Site Scores 1	2	3	4	X	SD	Third Grade Classroom Scores/Site Scores 1	2	3	4	X	SD
Greenwood (E1)*	69%	67%	64%	70%	67%	2.8	64%	71%	69%	69%	68%	3.0
Ft. Walton Beach (E1)	74	68	73	72	72	2.5	79	79	77	73	77	2.8
New York City (EK)*	64	66	66		65	1.3	63	59	61	65	62	2.5
Greeley (EK)	79	81	82		81	1.8	78	77	84		80	3.5
Denver (EK)	80	69	70	74	73	4.7	68	64	74	74	70	4.8
Total Sponsor Scores: (N = 18)					72%	5.8		(N = 19)			71%	7.1
Non-Follow Through Scores: (N = 35)					63%	5.9		(N = 36)			62%	6.9
t = 5.22								t = 4.56				
p < .001								p < .001				

*EK = children entered school in kindergarten.
E1 = children entered school in first grade.

with a high percent (25%) of children for whom English is a second language. The implementation scores are higher and significantly different at both grade levels in comparison to non-Follow Through (based on 47 implementation variables). However, the standard deviation between High/Scope site scores is similar to that of non-Follow Through classrooms.

For the most part in this analysis, classrooms are expected to be in the upper range of the quintiles when compared to traditional classrooms. However, EDC does not expect classrooms to conform to model specifications or to differ radically from traditional classrooms. EDC is an "approach" to education that recognizes, respects, and incorporates differences into its program. Ideas are offered about how to arrange classroom environments and how to prepare low cost exploratory materials for children. But by their own example of not intruding or insisting upon conformity, the model encourages teachers to respect the rights and opinions of children and to treat them as individuals. Workshops and guidance are offered by EDC staff, and teacher attendance is voluntary rather than mandatory. Thus, a higher rate of variance should be expected among EDC classrooms.

In EDC's Burlington site, there is remarkably little variation among the total implementation scores of classrooms at the site for either grade (see Table 9). Philadelphia shows more variation in the total implementation scores for the third grade than do other sites. Rosebud's third grade has the least variation of all groups. While the total deviation between all classroom implementation scores is not great, the EDC classrooms do not differ significantly from the non-Follow Through classrooms whose scores were computed on these same 35 EDC variables. This lack of difference may indicate that (1) there is no difference between EDC classrooms and non-Follow Through classrooms, or (2) the implementation variables selected by the sponsor were not sensitive enough to differentiate the model classrooms from the non-Follow Through classrooms.

Table 9

TOTAL IMPLEMENTATION SCORES FOR CLASSROOMS BY SITE FOR EDC

Sites	First Grade Classroom Scores/Site Scores 1	2	3	4	X	SD	Third Grade Classroom Scores/Site Scores 1	2	3	4	X	SD
Burlington (EK)*	64%	69%	62%	66%	65%	2.9	66%	67%	63%	64%	66%	1.3
Philadelphia (EK)	57	66	62	54	60	5.6	71	65	70	56	66	7.0
Paterson (EK)	69	67	62	63	65	3.1	63	52	58	60	58	4.6
Rosebud (EK)*	59	53	52		55	3.8	61	62	62		62	.9
Smithfield (E1)*	66	61	72	62	65	5.0	73	70			71	2.0
Total Sponsor Scores: (N = 19)					62%	5.6		(N = 17)			64%	5.6
Non-Follow Through Scores: (N = 35) t = -.36 p< N.S.					63%	5.9		(N = 36) t = .88 P< N.S.			62%	3.0

*EK = children entered school in kindergarten.
E1 = children entered school in first grade.

B. A Study of the Relationship Between Teacher Characteristics/Training and Implementation Scores

In the study of implementation it is important to try to understand what methods or strategies sponsors employed to bring about the changes in teacher behavior and what teacher characteristics are related to classroom implementation. The evaluation of classroom conformity to sponsor goals, which was described in the preceding section by sponsor, leaves no doubt that implementation of the Follow Through models has taken place in many diverse sites.

We made an effort to determine (1) which elements in the sponsors' inservice teacher training program were effective in the implementation process, and (2) which teacher characteristics might be related to successful implementation. Items from an SRI-developed and -administered Teacher Questionnaire regarding the sponsor's teacher training program, teaching experience, education, and satisfaction with the sponsor's model were analyzed.

Correlations were computed to examine the relationship between

classroom implementation scores and selected teacher characteristics and the sponsor's training of teachers.

Analyses of this data indicate the following:

1. Teacher Training Emphasis

In general, sponsors (other than EDC) seem to provide greater assistance to teachers who have lower classroom implementation scores (see Table 10).

2. Follow Through Teaching Experience

Classroom implementation scores and the number of years of teaching experience in the Follow Through program are significantly related in the Far West and Bank Street models and tend to be positively correlated in the case of U. of Oregon and U. of Kansas. The negative correlations suggest that the U. of Arizona and EDC models may be implemented better by teachers in their first year of Follow Through experience than by teachers who have been with the model for a longer time (see Table 11).

3. Formal Education

The data on formal education show that teachers with graduate work have higher implementation scores in Bank Street and U. of Oregon but not in other models (see Table 12).

4. Teacher Satisfaction with Model

Teachers in all the Follow Through models expressed considerable satisfaction with their particular model (see Table 13). In only one model (U. of Oregon) was there a significant, but negative, relationship between implementation and satisfaction (see Table 14). This finding suggests that teachers who are best at implementing the model may be the least satisfied with it and may want to change it somewhat.

5. Structure of Classroom

Teachers' descriptions of the extent of structure in their classrooms is quite distinct (see Figure 2 for items used in this scale). A low score indicates greater structure, while a high score indicates flexibility. (The range of scores is from a low of 11 to a high of 55). The teachers' reports

Table 10

CORRELATIONS OF TEACHER-REPORTED PARTICIPATION IN TRAINING PROCEDURES WITH CLASSROOM IMPLEMENTATION SCORES BY SPONSOR

Training Procedure	FW (N=40) r	p≤	UA (N=33) r	p≤	BC (N=38) r	p≤	UO (N=37) r	p≤	UK (N=34) r	p≤	HS (N=40) r	p≤	ED (N=38) r	p≤
Materials mailed to you for your own use	-.22		.25		-.14		-.36*	.01	-.13*		-.35	.01	-.07	
Visits or demonstrations in your own classroom	-.09		-.03		.21		.06		.12		-.14		.41*	.01
Visiting or observing work of other teachers in their classrooms	-.20		-.25		-.20		-.21		-.32	.05	-.22		.21**	
Workshops during vacation periods	.06		.23*		.26		-.12		.20*		-.02		.21*	
Workshops on Saturday or after school	.32	.05	-.53	.001	.10		.08		.02*		-.09		.24	
Consultations with specialists or trainers, not in your own classroom	.02		-.01		.09		-.12		.07*		-.31	.05	.44*	.01
Videotapes of model teaching episodes	-.11		-.16		.14		-.18		-.05*		.32	.05	.17*	
Videotapes of yourself in teaching episodes	-.11		.001		-.15*		.19		.10		.12		.27*	.05

* One teacher failed to respond to this item.

** Two teachers failed to respond to this item.

Table 11

CORRELATIONS OF TEACHERS' YEARS IN FOLLOW THROUGH WITH IMPLEMENTATION SCORES

	FW (N=39)		UA (N=31)		BC (N=37)		UO (N=37)		UK (N=34)		HS (N=40)		ED (N=37)	
	r	p<	r	p<	r	p<	r	p<	r	p<	r	p<	r	p<
Correlations and Significance Levels	.41	.01	-.40	.01	.37	.01	.22		.18		.03		-.34	.05
Teachers' Years of Follow Through Experience (in the classroom):														
Not a complete year	0		0		1		0		0		0		2	
One complete year	9		7		10		9		9		9		10	
Two or more years	30		24		26		28		25		31		25	

Table 12

CORRELATIONS OF TEACHERS' FORMAL EDUCATION WITH IMPLEMENTATION SCORES

	FW (N=40)		JA (N=33)		BC (N=37)		UO (N=36)		UK (N=34)		HS (N=40)		ED (N=38)	
	r	p≤	r	p≤	r	p≤	r	p≤	r	p≤	r	p≤	r	p≤
Correlations and Significance Levels:	-.13		.20		.35	.05	.45	.01	-.28	.05	.04		-.16	
Teachers' Levels of Education:														
Less than Bachelor's	0		0		0		0		0		0		2	
Bachelor's	19		14		10		5		6		16		24	
More than Bachelor's	18		13		12		26		13		20		8	
Master's and above	3		6		15		5		15		4		4	
Total Teachers	40		33		37		36		34		40		38	

Table 13

PERCENT OF TEACHERS SATISFIED WITH THE MODEL

Questionnaire Items	FW		UA		BC		UO		UK		HS		ED	
	First Grade	Third Grade	First Grade	Third Grade	First Grade	Third Grade	First Grade	Third Grade	First Grade	Third Grade	First Grade	Third Grade	First Grade	Third Grade
Would continue to teach in Follow Through	(N=20) 90%	(N=20) 75%	(N=16) 68%	(N=17) 82%	(N=19) 100%	(N=19) 79%	(N=20) 90%	(N=17) 94%	(N=16) 69%	(N=16) 94%	(N=21) 91%	(N=19) 100%	(N=20) 95%	(N=18) 94%
Would change the model:	(N=20)	(N=20)	(N=16)	(N=15)	(N=19)	(N=19)	(N=18)	(N=17)	(N=17)	(N=17)	(N=21)	(N=19)	(N=19)	(N=18)
Not use approach	0%	0%	6%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Change most of it	10	5	6	7	0	16	10	23	29	12	5	0	5	5
Continue but alter some	45	55	63	60	5	47	53	65	47	65	52	58	16	39
Continue unchanged	45	40	25	33	95	37	32	12	24	23	43	42	79	56
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 14

CORRELATION OF TEACHERS' SATISFACTION WITH THE MODEL WITH IMPLEMENTATION SCORES

(First and Third Grades Combined)

Questionnaire Items	FW N=40		UA N=33		BC N=38		UO N=37		UK N=34		RS N=40		ED N=38	
	r	p<	r	p<	r	p<	r	p<	r	p<	r	p<	r	p<
Would continue to teach in Follow Through	.01		-.23		.01		-.50	.001	-.09**		-.08		-.08	
Would change the model	-.09		-.28**		.22		-.56*	.001	-.16		-.01		.08*	

* One teacher failed to respond to this item.

** Two teachers failed to respond to this item

Figure 2

CLASSROOM DESCRIPTION

32. Classrooms differ in many ways depending upon the philosophy and goals of the teaching staff, needs of children, etc. Each statement in Column A is matched with a contrasting statement in Column B. For each pair, place an X inside the parentheses which comes closest to describing your own classroom.

Column A	Almost Always Like A ⟷ Somewhat Like A and Somewhat Like B ⟷ Almost Always Like B					Column B
a. Children work independently*	(1)	(2)	(3)	(4)	(5)	Children work under adult supervision
b. Teacher imparts information and provides demonstrations	(1)	(2)	(3)	(4)	(5)	Children gather information on their own
c. Adults initiate interactions with children	(1)	(2)	(3)	(4)	(5)	Children initiate interactions with adults
d. Emphasis on emotional needs*	(1)	(2)	(3)	(4)	(5)	Emphasis on subject matter
e. Various activities take place at the same time*	(1)	(2)	(3)	(4)	(5)	All the class is engaged in the same activity
f. Lesson plan is followed closely	(1)	(2)	(3)	(4)	(5)	Lesson plan is flexible
g. Work and play are distinguished	(1)	(2)	(3)	(4)	(5)	Work and play are not distinguished
h. Children choose their own activities and materials*	(1)	(2)	(3)	(4)	(5)	Teaching staff determines activities and materials
i. Individual needs dominant*	(1)	(2)	(3)	(4)	(5)	Group needs dominant
j. Children interact freely with each other*	(1)	(2)	(3)	(4)	(5)	Children do not interact freely with each other
k. Children change places freely*	(1)	(2)	(3)	(4)	(5)	Children have assigned seats

*Scores have been reflected for consistency in scoring.

Table 15

FOLLOW THROUGH TEACHER RATINGS
ON THE CLASSROOMS' STRUCTURE/FLEXIBILITY SCALE*

Sponsors and Sites	Teacher N	$\bar{X}$	S.D.
Far West Laboratory for Educational Research and Development	37	41.4	4.9
0201 Berkeley, Calif.	7	40.0	2.3
0204 Duluth, Minn.	7	43.1	3.7
0207 Lebanon, N.H.	8	40.4	4.0
0209 Salt Lake City, Utah	7	42.9	6.0
0213 Tacoma, Wash.	8	40.6	7.1
University of Arizona	29	39.8	4.0
0305 Des Moines, Iowa	9	37.1	4.1
0309 Lakewood, N.J.	7	41.1	4.1
0311 Newark, N.J.	6	38.3	2.3
0316 Lincoln, Nebr.	7	43.1	2.2
Bank Street College	32	40.2	4.5
0502 Brattleboro, Vt.	5	41.6	4.8
0504 Fall River, Mass.	8	41.6	2.7
0506 New York City, P.S. 243K	8	41.3	2.0
0508 Phil. II, Pa.	7	34.6	5.0
0510 Macon Co., Ala.	4	43.3	1.3
University of Oregon	32	31.2	4.4
0703 E. St. Louis, Ill.	7	30.1	4.8
0707 New York City, P.S. 137K	5	31.6	5.1
0709 Racine, Wisc.	8	31.0	4.6
0711 Tupelo, Miss.	6	31.2	3.4
0719 Providence, R.I.	6	32.3	5.2
University of Kansas	32	33.6	5.3
0801 New York City, P.S. 77X	4	35.5	5.2
0803 Phil. VI, Pa.	6	35.8	2.5
0804 New Madrid Co., Mo.	7	32.4	4.0
0806 Kansas City, Mo.	8	32.5	7.7
0807 Louisville, Ky.	7	33.0	5.4
High/Scope Educational Research Foundation	32	42.9	5.7
0901 LeFlore Co., Miss.	10	39.3	5.1
0902 Okaloosa Co., Fla.	5	46.2	5.2
0903 New York City, P.S. 92M	4	47.0	2.9
0906 Greeley, Colo.	5	44.0	6.2
0907 Denver, Colo.	8	42.5	6.2
Education Development Center	37	42.3	4.8
1101 Burlington, Vt.	8	43.1	6.0
1103 Phil. IV, Pa.	7	38.6	5.3
1106 Paterson, N.Y.	7	41.9	3.8
1107 Rosebud, Texas	9	44.8	2.6
1108 Johnston Co., N.C.	6	45.8	3.3
Non-Follow Through	60	35.0	4.6

* Coefficient α for this scale was equal to .76.

of their classroom practices which conform to the requirements of the sponsor's model could not have happened by chance (see Table 15). The influence of the sponsors is apparent because (1) there is little deviation among the teachers' reports, and (2) the more structured models (U. of Oregon and U. of Kansas) are lower on the scale and the more flexible models are higher on the scale.

C. Classroom Instructional Processes and Child Outcomes

A study of program implementation would have little value if we did not believe that classroom instructional processes are related to children's cognitive and affective development.

In one attempt to examine this relationship, correlations were computed between classroom implementation scores and means of classroom test scores, partialling out the baseline WRAT score. One hundred eight first grade and 57 third grade classrooms were used in this study.

The children in the first grade classrooms which had higher implementation scores achieved higher scores on MAT reading and arithmetic in the Far West, U. of Arizona, Bank Street, and U. of Oregon models (see Table 16). Six out of 15 correlations were significant ($p < .05$). Only EDC had a significant negative correlation. The trend in the third grade is also toward positive correlations between implementation scores and test scores; however, only one out of the 24 correlations were significant ($p < .05$). Third grade children in the better implemented EDC classrooms achieved significantly higher scores on the Ravens test. The significant EDC negative correlation between implementation scores and first grade math scores was reversed in the third grade to a positive correlation.

Using 166 combined Follow Through and non-Follow Through classrooms, partial correlations were also computed for classroom instructional processes on the following: selected child behaviors, absence rate, and test scores.*

In both first and third grades, the tendency is for higher reading and math scores to be associated with variables which describe the more structured/teacher initiated models. Variables describing the time spent in

*Details of these studies are available at SRI, Menlo Park, California.

Table 16

PARTIAL CORRELATIONS OF CLASSROOM TEST SCORES WITH IMPLEMENTATION SCORES

	FW		UA		BC		UO		UK		HS		ED	
	r	p<	r	p<	r	p<	r	p<	r	p<	r	p<	r	p<
First Grade	(N=12)		(N=14)		(N=11)		(N=5)		(N=17)		(N=13)		(N=12)	
MAT														
Reading	.51	.05	.38		-.05		.80	.05	.003		.04		-.41	
Math	.49	.05	.47	.05	.52	.05	.70		.13		.25		-.68	.01
Third Grade	(N=14)		(N=2)*		(N=7)		(N=4)*		(N=12)		(N=0)*		(N=6)	
MAT														
Reading	.35				-.45				.33				.52	
Math	.39				-.58				.20				.19	
Ravens	-.12				.17				.15				.77	.05
Coopersmith	.20				.09				.01				.23	
IAR--Success	-.14				.19				.32				.62	
IAR--Failure	.14				-.32				.20				-.31	

*Correlations not computed.

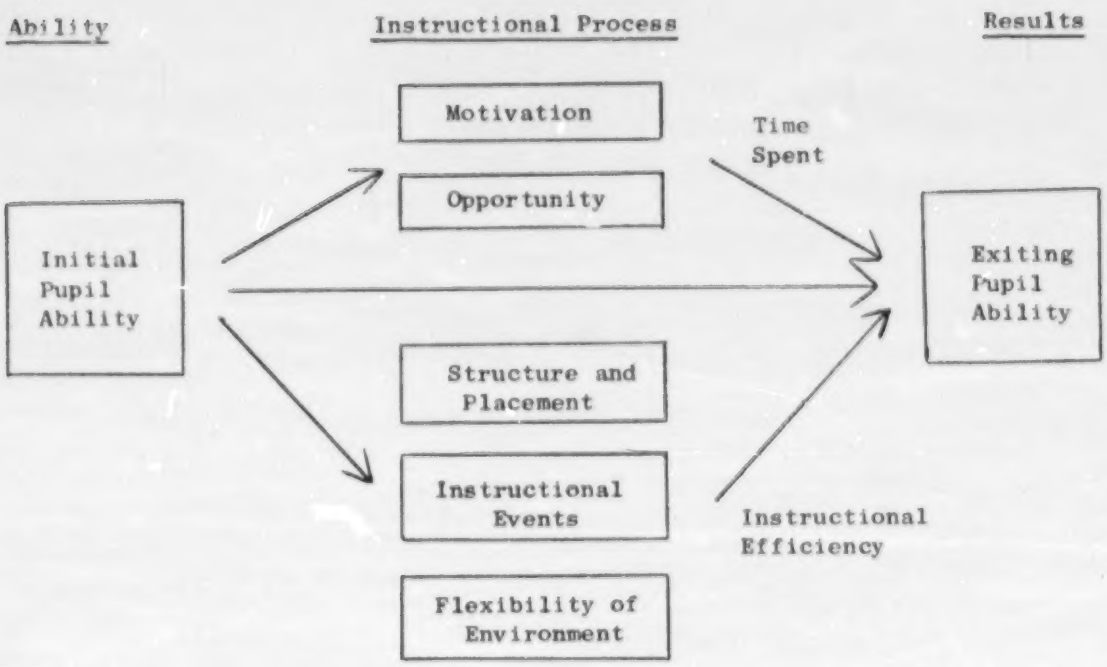
reading or math activity were also highly correlated with test scores. In general, a low absence rate, high independence, and high scores on the Ravens and Coopersmith tests tend to be associated with the more flexible models.

The IAR Success scale is positively related with variables describing the more open classrooms. In general, it seems that children from the flexible classrooms take responsibility for their own success but not for their failure. Children from the more highly structured classrooms take responsibility for their own failure but attribute their success to their teacher's competence or other forces outside themselves.

Because it is difficult to assimilate and understand all of the findings from the correlational studies, some regression models were constructed. Variables representing the structured and less-structured models of education were selected on an a priori basis. Figure 3 illustrates these models. The

Figure 3

A MODEL FOR EDUCATION



WRAT scores were used as baseline pupil ability and the MAT Reading and Math scores were used as outcome criterion measures. Appropriate variables were also selected using the Raven's Progressive Matrices for the criterion measure. Table 17 presents these findings. One striking aspect of Table 17 is the dominance of the Fall 1971 WRAT scores. This score dominates the variance for reading in both the structured and less structured models at both grade levels. Instructional variables account for more of the variance in the third grade math scores than does the MAT score. The baseline score and the instructional variables account for approximately the same amount of variance in the Ravens. The total variance explained by the structured or less structured models differs very little. The total explained variance ranges between a low of 51 percent in the less structured math at third grade and a high of 64 percent in the less structured reading in the first grade.

An attempt was made to replicate a regression model suggested by William Cooley of the University of Pittsburgh and carried out by John Emrick of SRI on the 1972 data. In spite of the fact that a different baseline test battery was used in the two studies and the difference in time between pretest and posttests, the variance accounted for by entering ability (unique) is similar for both studies (see Table 18). However, the instructional process (unique) accounts for nearly three times as much of the variance in the 1972 study as in the 1973 study. Shared (ability and process) is a negative 10 percent for the 1972 study and accounts for only one percent of the variance in the 1973 study. The percentages of variance accounted for by the separate instructional component variables are presented in Table 19.

The instructional process variable "opportunity" uniquely accounts for 17 percent of the criterion variance in the 1972 study and for none of the variance in the 1973 study. The findings of the large percent of variance accounted for by the process variables for the first study are not replicated in the second study. Some of the reasons for the differences may be due to the fact that the first study was based upon 30 first grades representing five sponsors in five southern sites, while the second study had 112 first grade classes representing seven sponsors in 25 sites in many geographical

Table 17

PERCENT OF TOTAL CRITERION VARIATION DUE TO GIVEN SOURCE

	Number of Classrooms	Unique		Shared**	Total Explained	Residual	p<***
		Covariables*	Instructional Process Variables				
First Grade							
Reading							
Structure	105	48	10	5	63	37	.01
Less Structure	105	40	11	13	64	36	.001
Math							
Structure	105	28	17	9	54	46	.001
Less Structure	105	21	14	16	51	49	.001
Third Grade							
Reading							
Structure	58	38	12	6	56	44	.05
Less Structure	58	41	10	3	54	46	.05
Math							
Structure	58	24	36	-2	58	42	.001
Less Structure	58	21	29	1	51	49	.001
Ravens	58	25	21	16	62	38	.001

*WRAT score.

**Shared refers to that percent of variance which entering ability (Covariables) and the Instructional Process Variables share.

***$p <$ is the level for test of whether the regression coefficients for the instructional variables are all zero.

Table 18

Component Analysis of First Grade Classrooms

Source of Variance	Percent of Total Criterion Variance Due to Source	
	1972 (N = 30)	1973 (N = 112)
Ability (unique)	55.7	52.0
Instructional process (unique)	25.8	9.0
Shared (ability and process)	-10.0	1.0
Total Explained	71.5	62.0
Error	28.5	38.0

Table 19

PERCENT OF CRITERION VARIANCE UNIQUELY ACCOUNTED FOR BY EACH INSTRUCTIONAL PROCESS VARIABLE IN THE COOLEY MODEL

Variables	1972 First Grade (N = 30)	1973 First Grade (N = 112)
Motivation	0%	2%
Opportunity	17	0
Structure and Placement	3	0
Instructional Events	1	2

locations. We conclude that the findings for the first study are appropriate for that particular sample of sponsors, sites, and classrooms but that they are not generalizable to other populations. Even so, the regression model has utility in organizing complex variables. The overall multiple regression coefficients are quite high (about .85 and .79) for the two studies.

In comparing the Cooley model and the Structured and Less Structured models using the 1973 first grade reading scores, 4 percent more of the variance was explained by entering ability in the Cooley model than was explained by entering ability in the Structured or Less Structured models. The variance accounted for by the instructional process variables was

approximately the same for all three models. Shared variance explains more of the variance for the Less Structured model than it does for either the Structured or the Cooley model. The total variance explained by the Cooley model is 63 percent, by the Structured model is 63 percent, by the Less Structured model is 64 percent. We conclude that the three models are equally good in predicting first grade reading scores.

Summary

We have addressed three aspects of the Follow Through Classroom Observation study in this paper: (1) the extent of implementation in the classroom, (2) the relationship of training and teacher characteristics to classroom implementation, and (3) the relationship of student outcome to classroom implementation and program characteristics.

The sections on sponsor implementation provide convincing evidence that teachers are conforming to sponsor specifications. There is little deviation between classrooms on implementation variables, and, except for EDC, the models differ statistically from non-Follow Through. Most teachers in this study seem to differ from those described by John Goodlad (1970) in Behind the Classroom Door, for these Follow Through teachers have both the understanding of the model since each sponsor's group of teachers described their own classrooms quite consistently on the structure/flexibility scale and the ability to implement the model as proven by the systematic observations.

In addition, the better a model has been implemented in a classroom, the more likely it is that the children will perform better on the criterion tests. Variables associated with the more structured classrooms are positively correlated with math and reading scores, whereas variables associated with the more flexible classrooms have higher correlations with such factors as lower absence rate, independence, and scores on the Ravens perceptual problem solving test.

On the basis of these findings, we conclude that Follow Through planned variation is working--not by chance, but by careful design.

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